WEATHER ON THE NORTH PACIFIC OCEAN

By WILLIS E. HURD

Atmospheric pressure.—Mean pressure was practically normal in July at nearly all points on the North Pacific shores. The most notable departure from normal occurred at St. Paul Island, in the Bering Sea, where the average pressure, 1,014.2 millibars (29.95 inches), was 3.7 millibars (0.11 inch) above the July normal. At the northern extremity of Alaska, the mean pressure at Barrow was 2.5 millibars (0.08 inch) below the normal.

The Aleutian LOW was considerably weaker in July than in the previous June, and lay as a shallow depressed area along the Aleutian Islands and the Peninsula of Alaska. The tendency, however, was for a general northward movement of the LOW into the Arctic Ocean, as indicated by the mean pressure at Barrow, which was 3½ millibars (0.10 inch) below that at St. Paul.

High pressure prevailed in midocean.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Pacific Ocean and its shores, July 1941*

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	*Millibars*	*Millibars*		*Millibars*	
Barrow	1,010.7	−2.5	1,025	10	992	21
Dutch Harbor	1,013.9	+0.1	1,028	27	995	13
St. Paul	1,014.2	+3.7	1,030	27	995	14
Kodiak	[1]	[1]	[1]	[1]	[1]	[1]
Juneau	1,018.0	+0.4	1,027	9	1,005	20
Tatoosh Island	1,018.0	+0.2	1,026	29	1,010	27
San Francisco	1,013.9	−0.3	1,019	29	1,008	22
Mazatlan	1,011.4	+0.2	1,014	21	1,008	14
Honolulu	1,015.6	−1.0	1,019	1	1,012	31
Midway Island	1,020.6	+1.0	1,023	7, 8	1,016	25
Guam	1,008.9	−1.6	1,012	13	1,003	31
Manila [2]	1,007.9	+0.8	1,011	10	1,001	3
Hong Kong	1,003.4	−0.7	1,009	31	996	5
Naha	[1]	[1]	[1]	[1]	[1]	[1]
Titijima	[1]	[1]	[1]	[1]	[1]	[1]
Petropavlovsk	[3]	[3]	[3]	[3]	[3]	[3]

[1] Insufficient data.
[2] For 18 days.
[3] No data.

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observations.

Extratropical cyclones and gales.—A few disturbances of no great energy crossed northern waters of the Pacific, and very few gales resulting from their activities were indicated in ships' reports. The period 14th to 18th was the only one in which locally fresh to strong gales occurred well out at sea. During this time gales of force 9 were reported near 39° N., 179° W., on the 14th, and near 42° N., 152° W., on the 15th. On the 18th a force-8 gale occurred near 51° N., 149° W. On the 16th a cyclone of some depth was centered near Kodiak Island.

Local gales of force 8 to 9 were experienced not far from the California coast on the 8th and 24th.

Tropical cyclones.—Subjoined is a report by the Reverend Bernard F. Doucette, S. J., Weather Bureau, Manila, P. I., on five typhoons and one depression which occurred in waters of the Far East during July.

Little is known of the actual wind intensity of these cyclones throughout their courses, but in the earliest, that of June 29–July 6, a vessel reported an east gale of force 10, on July 1, east of the Philippines. In the cyclone of July 23–29, a vessel reported a southeasterly gale of force 8, barometer 997.3 millibars (29.45 inches), on the 25th, near 24½° N., 138½° E.

West of Mexico, observations point to the existence of at least three, and perhaps four or five, tropical cyclones in July. The earliest came under specific observation on the 3d, with two vessels reporting westerly gales of force 9 near 18° N., 119° W., lowest barometer 995.9 millibars (29.41 inches). The course of the storm may have been toward the Mexican coast south of Cape Corrientes, for during the early morning of the 6th there were further reports of fresh to strong shifting gales and low barometer near 16° N., 109° to 110° W. Since, however, the same two vessels that left the storm area on the 3d ran into the succeeding storm area on the 6th, some 9° to the eastward, and without intervening disturbed conditions noted, it is quite probable that the two occurrences represent two distinct cyclonic formations of brief existence.

Heavily disturbed weather appeared on the 15th near 15° N., 105° W., where fresh northwesterly gales shifting to southwesterly winds of force 10 occurred, with barometer as low as 994.6 millibars (29.37 inches). On the 16th, near 14° N., 111° to 112° W., further southwesterly gales were encountered. There are thus indications that the cyclone of the 15th had some westerly movement. However, disturbed weather, with strong easterly winds, was experienced on the 18th at some distance west of Cape San Lucas. On the 21st, also, heavy north gales shifting to easterly, with considerable depression of the barometer were reported near 13° N., 117° to 118° W. The relationship between these several isolated storm conditions observed is confused.

Fog.—Fog is usually at its height on the northwestern Pacific in July. During the current month, owing to reduced ships' observations, a sharp lessening of fog occurrence is noticeable for the area southwest of the Aleutian Islands. Between 35° and 45° N., west of the 180th meridian, fog was reported on 1 to 3 days in most of the 5° areas. In the eastern part of the Bering Sea fog was noted on 4 days, and in the Gulf of Alaska on 9 days. In the general area 32° to 45° N., 130° to 145° W., fog was observed on 9 days. Along the American coast 16 days were reported with fog in or near the Strait of Juan de Fuca. Ships noted fog on 3 days off Oregon, on 14 days off California, and on 6 days off Lower California. In the tropical ocean region 15° to 20° N., 112° to 118° W., there was fog on the 4th, 5th, and 9th.

TYPHOONS AND DEPRESSIONS OVER THE FAR EAST

BERNARD F. DOUCETTE, S. J.

[Weather Bureau, Manila, P. I.]

Typhoon, June 29–July 6, 1941.—When the preceding typhoon (June 23–July 4) was over the China Sea, a new typhoon began to manifest itself about 350 miles south of Guam, appearing as a depression. It moved northwest, then west, and intensified to typhoon strength during the afternoon hours of July 1 when the center was about 400 miles east of San Bernardino Strait. It became a threat to central and northern Luzon, but did not affect Catanduanes Island as the previous typhoon did. Moving west-northwest and then northwest, it crossed northern Luzon July 3 and 4, passing north of Palanan, Isabela Pr., south of Aparri and north of Tuguegarao, both in Cagayan Pr., and then north of Laoag, Ilocos Norte Pr., as it passed into the China Sea. This course is almost the same as that followed by the typhoon of June 23–July 4. It moved along a west-northwesterly course over the China Sea, inclining to the northwest as it approached the Continent. After passing inland about 75 miles northeast of Hong Kong it disappeared, July 6, over the regions north of the colony. The storm was not as intense as the previous typhoon and the reports of destruction printed in the newspapers were not startling. The writer did not read of any loss of life due to this storm.

Barometric minima reported from stations along the course of this typhoon are given below. Palanan, Isabela Pr., had 731.58 mm. (975.4 mb.) as its lowest pressure, July 3, 3 p. m. (Manila time). Tuguegarao, Cagayan Pr., reported 736.60 mm. (982.1 mb.) which occurred at 7:45 p. m. July 3. Aparri, Cagayan Pr., recorded 740.65 mm. (987.5 mb.) at 10:10 p. m. the same day. Early the next morning, Laoag, Ilocos Norte Pr., had its minimum value, 743.34 mm. (991.0 mb.) at 2:00 a. m. The highest wind velocities reported were force 9, from the south, at Palanan, after the center had passed. (NOTE.—Pressure values given above are corrected for gravity.)

Over the Philippines, the strongest velocity reported from the pilot-balloon stations was 110 k. p. h. at 2,000 meters over Cebu, July 3, afternoon ascent. The direction was southwest. At the other stations, the velocities at some levels were as high as 65 to 70 k. p. h. but mostly they were below 50 k. p. h., and in general, the upper winds were not so strong as during the preceding typhoon. The few reports received from Thailand and Indo-China stations indicated that the southwesterly air stream over these regions was weaker than during the 10-day period before July 1. At Guam, June 29, there were no ascents due to poor weather conditions and the easterly winds over that station reached velocities of 64 k. p. h. at 1,000 meters, June 30, 0300 G. C. T. ascent. This was the only time at Guam when velocities over 50 k. p. h. occurred during these few days when the disturbance was forming.

Typhoon, July 9–16, 1941.—A weak disturbance moved westward in a low-pressure area far to the east of northern Luzon. It became a definite depression on July 11, central about 500 miles east-northeast of San Bernardino Strait. After moving in a north-northwesterly direction about 800 miles, it intensified to typhoon strength over the regions about 450 miles east of Formosa. It then moved northwest into the Eastern Sea, where it recurved to the northeast, a course which carried it north of Oshima, Nansei Islands, and over the ocean parallel to the coast line of Japan. It disappeared southeast of central Japan.

Typhoon, July 11–16, 1941.—This typhoon appeared about 250 miles northeast of Guam, quite strong, probably originating over the eastern Caroline Islands. It moved north-northwest, then northwest, and coalesced with the typhoon described above (July 9–16) over the regions south of Kobe, after which both disturbances weakened and disappeared.

Guam had been in a southwesterly current since July 6, the velocities being under 50 k. p. h. There were no ascents July 10, due to poor weather conditions. July 11 and the following days showed a strong southwesterly current over the island, with velocities up to 80 k. p. h. (500 meters, afternoon ascent July 11) and then gradually decreasing to values less than 50 k. p. h. a few days later.

Typhoon, July 17–24, 1941.—There was a low-pressure area far to the southeast of Guam, which strengthened into a depression, July 18, central about 200 miles east-southeast of the island. The disturbance moved northwesterly and manifested itself as a typhoon about 120 miles north of Guam, July 19. It moved westerly for a short distance, and then made a sharp turn to the north. It moved rapidly in this direction, passing about 180 miles west of the Bonins, and reached Japan, July 23. It moved a short distance overland, recurving to the northeast about 100 miles north-northeast of Tokyo. It disappeared over the ocean July 24.

The upper winds over Guam changed from an easterly current, July 16, to a northerly current, July 17 and 18, and finally southwesterly winds were flowing over the island. At no time were the velocities over 35 k. p. h.

Depression, July 17–21, 1941.—Over the ocean between the Philippines and the Mariana Islands, a weak center appeared July 17, and moved slowly west-northwest, becoming a depression, July 20, about 500 miles east of the Balintang Channel. On July 21, it inclined to the north and disappeared about 400 miles east of Formosa. Apparently it was mild and not dangerous.

Typhoon, July 23–29, 1941.—A low pressure area moved west-northwest from the ocean regions about 300 miles west of the Mariana Islands. When it was central about 600 miles east of the Balintang Channel, it quickly changed to a northerly course and also intensified to typhoon strength. It moved rapidly toward Japan and crossed the southern regions of that country on July 27. It recurved to the northeast and east over the Sea of Japan and on July 29 it was over the Pacific Ocean, weakening to depression strength. It probably disappeared July 30.

NOTE.—On July 9, a ship's report was received at the Observatory (broadcast from 8 Z W, Zi-ka-wei, Shanghai) which read as follows: "Ships 13 136 SW. 3 rain vis. 744 pressure" (latitude 13 N. longitude 136 E., winds SW., force 3, pressure 744 mm. (991.9 mb.)). This observation could not be neglected. There were no means of verifying these numbers in a short space of time, so typhoon warnings were distributed and the disturbance, whatever it was, was kept on the weather maps for 2 or 3 days. There were other ships reporting from the regions east of San Bernardino Strait, none of which gave any indication of the existence of any typhoon, and so, unless further information is received, it will be assumed that there was an error of some kind in the above mentioned report. If the report is correct, and there really was a small typhoon in that locality, the writer would appreciate confirmation of the above report so that the typhoons of July 1941 may be correctly enumerated.

RIVER STAGES AND FLOODS

By BENNETT SWENSON

During July 1941, precipitation was above normal in all States east of the Mississippi River, except Indiana, Illinois, Michigan, and Wisconsin. In Tennessee, the precipitation was the heaviest for this month in 59 years of record, the average for the State being more than one and one-half times the normal; Virginia, the Carolinas, Alabama, and Mississippi had about one and one-half times the normal precipitation.

West of the Mississippi River, precipitation was deficient in the Upper Mississippi, the Missouri, and most of the Arkansas River Basins, but was above normal elsewhere except in Oregon and Arizona.

The excess rainfall during July maintained river stages above normal in the Southeastern States and in the Tennessee River for the first time this year. Floods, mostly light to moderate, were confined generally to the Carolinas and portions of Georgia, Tennessee, and Kentucky in the East, and in Kansas, Oklahoma, and eastern Texas west of the Mississippi.

Atlantic slope drainage.—Frequent rains during the month in the Carolinas and portions of Georgia, heavy during the week beginning July 13, resulted in light to moderate floods in most of the streams in this area.

The Roanoke River reached flood stage in the lower portion on July 22 and crested at a stage of 10.3 feet on the 24th at Williamston, N. C. The Neuse River overflowed from July 14 to 23, crest stages of from 2 to 4 feet above flood stage being recorded from Smithfield, N. C., to Kinston, N. C.